Article

Dependence of Prolactin on The Level of Lower Limb Amputation in Paralympic Athletes

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Abstract: The purpose of this study was to identify the dependence of prolactin on the lower extremities level of traumatic amputation in Paralympic athletes. The study used prolactin levels in members of Russian national teams (n=150) with traumatic amputations of the lower extremities at different levels in the pre-competitive period. It was found that the level of prolactin in Paralympic athletes is directly proportional to the level of lower limb amputation.

Keywords: prolactin, hormonal status, Paralympic athletes, Paralympic sports

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1. Introduction

At present, in the conditions of implementation of the complex system of sports training in Paralympic sport, scientific research aimed at studying the issues of medical support in order to individualize and improve the effectiveness of the training process, to achieve the highest sports results is becoming increasingly relevant [1, 2]. Until now, the concept of medical support of Paralympic sport as an integral system aimed at preserving health and achieving high sports results has not been fully developed and scientifically substantiated, although the issues related to the peculiarities of Paralympic athletes' training, including hormonal response to physical load, are sometimes acute [3, 4].

Purpose of the study: To reveal the dependence of prolactin indices on the level of lower limb amputation in Paralympic athletes.

2. Patients and Methods

The present study was conducted at the A.I. Burnazyan Federal State Research Center FMBC of FMBA of Russia in the period from 2019 to 2023. The study used prolactin level indices in members of Russian national teams (n=150) with traumatic lower limb amputations at different levels. The mean age of the subjects was 34.41±8.84 years, BMI was 21.46±7.34 kg/m2. Blood was collected on an empty stomach during an in-depth medical examination in the pre-competition period. For statistical analysis we used the Kraskell-Wallis and Dunn criteria with Hill's correction.

3. Results

For the objective, the athletes were divided into 8 groups depending on the level of amputation: lower third of the tibia - 13 athletes, middle third - 18, upper third - 26; lower third of the thigh - 12 athletes, middle third - 26, upper third - 30; bilateral amputation at the level of the tibia - 13 athletes, bilateral amputation at the level of the thigh - 12 athletes. When assessing prolactin levels, a statistically significant difference was found according to the level of traumatic lower limb amputation (p=0.013), with prolactin levels being lowest in athletes with lower third tibial amputation (median 161.80 μMe/mL) and then gradually increasing in direct proportion to the height of amputation (medians 163.65→165.05→215.00→224.75→234.20 μMe/mL, respectively). The most significant difference (p=0.024) was determined between the prolactin levels of athletes with upper third tibial amputation (median 165.05 μMe/mL) and athletes with lower third femoral amputations (median 215.00 μMe/mL). The median prolactin levels in athletes with bilateral lower leg and thigh amputations were 176.90 and 232.20 μMe/mL, respectively.

4. Conclusions

The prolactin level of Paralympic athletes has a directly proportional relationship with the level of lower limb amputation.

Application of artificial intelligence:

The article is written without the use of artificial intelligence technologies.

Conflicts of Interest: The authors declare no conflict of interest.

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